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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,902	07/23/2003	William F. Long	15186-41US JA/Id	6746

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EXAMINER
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LAROSE, COLIN M

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/624,902	<b>Applicant(s)</b> LONG ET AL.	
	<b>Examiner</b> Colin M. LaRose	<b>Art Unit</b> 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-18 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/23/05</u> . | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

***Request for Information Under 37 CFR § 1.105.***

1. Applicant and the assignee of this application are required under 37 CFR § 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

Applicant is requested to provide the following prior art documents, which are listed on page 1 of the Specification but not previously submitted for consideration:

Hillman et al. (Phys. Med. Biol, 46 (2001) 1117-1130);

Pogue et al. (Opt. Express 1 (1997) 391-403); and

WO 0137195.

2. The fee and certification requirements of 37 CFR 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR 1.105 are subject to the fee and certification requirements of 37 CFR 1.97.

3. The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete reply to the requirement for that item.

*Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 7 recites the limitation "the stored coordinates of the defined plane". There is insufficient antecedent basis for this limitation in the claim. Claim 1, from which claim 7 depends, does not recite "storing coordinates of a defined plane" or "defining a plane." Appropriate correction is required.

*Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-4, 11-13, 15, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication 2002/0118280 by Medlar et al. ("Medlar").

Regarding claim 1, Medlar discloses a method for positioning a mammal or part thereof for optical imaging, the method comprising:

- i) obtaining a digital image of a surface of the mammal comprising a ROI (camera 4 obtains an image of a patient, including an area of interest);
- ii) defining the ROI (an operator defines an ROI 13);
- iii) registering coordinates of the ROI with an optical imaging system having collection optics components (paragraph [0016]: the coordinates, or position, of the ROI are registered with the imaging system by determining the spatial offset between the ROI and middle of the imaging region, i.e. the position of the camera);
- iv) positioning the mammal relative to an object plane of the collection optics based on said registered coordinates of said ROI such as to image the ROI (paragraph [0016]: based on the spatial offset, the patient's bed is adjusted so that the coordinates of ROI coincide with the center of the imaging plane—i.e. "where the best images can be made").

Regarding claim 2, Medlar discloses the step of obtaining a digital image comprises:

- i) positioning the mammal on a support so as to expose the surface of the mammal comprising the ROI to a field of view of a camera; and ii) acquiring a digital image of the exposed surface (these steps are illustrated in the figure).

Regarding claim 3, Medlar discloses the step of defining the ROI comprises:

- i) displaying the image of the surface comprising the ROI on a display (paragraph [0015]);
- ii) selecting the ROI to digitally record coordinates of the ROI (paragraph [0015]: technician designates ROI coordinates on a screen); and

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iii) storing the digitalized coordinates of the ROI in a computer (paragraph [0017]: ROI position data is stored in memory for later use).

Regarding claim 4, Medlar discloses the step of registering the ROI with an optical imaging system comprises programming the optical imaging system to acquire optical data from the ROI defined by the digitalized coordinates (paragraph [0016]: the imaging system is programmed to image the ROI, as defined by its coordinates, or position—that is, the imaging system is designed to image the position of the ROI in a center of the field of view of the imaging system according to the ROI coordinates designated by the technician).

Regarding claim 11, Medlar discloses a system for positioning a mammal for optical imaging, the system comprising:

- i) a mammal supporting means (2);
- ii) a camera (4) for digitally imaging a surface of the mammal comprising a ROI;
- iii) storage means (11) for storing the digital image;
- iv) a display (5) operationally linked to the storage means for displaying the stored digital image;
- v) a user interface (7) to define the ROI; and
- vi) a registering means (6) for registering the defined ROI with an optical imaging system.

Regarding claim 12, Medlar discloses the mammal supporting means is a tray (i.e. more specifically, a bed).

Regarding claim 13, Medlar discloses the tray is moveable relative to the optical imaging system (paragraph [0016]).

Regarding claim 15, Medlar discloses the tray comprises a motion sensor to detect movement of the mammal during imaging (paragraph [0016]: camera 9 senses body motion to determine whether the patient has shifted too far laterally).

Regarding claim 17, Medlar discloses the system further comprises a second camera (8) positioned such as to provide a field of view substantially perpendicular to the field of view of the first camera.

Regarding claim 18, Medlar discloses the first (4) and second camera (8), the mammal supporting means (2), the storage means (11), the display (5), the user interface (7) and the registering means (6) are operationally linked to a computer (6).

9. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,315,630 by Sturm et al. ("Sturm").

Regarding claim 1, Sturm discloses a method (figure 4) for positioning a mammal or part thereof for optical imaging, the method comprising:

- i) obtaining a digital image of a surface of the mammal comprising a ROI (image 50);
- ii) defining the ROI (step 74: fiducial marks are used to define a center thereof as an ROI);
- iii) registering coordinates of the ROI with an optical imaging system having collection optics components (controller 94 registers the coordinates of the ROI with a predetermined desired imaging position by determined the offset between the two);

iv) positioning the mammal relative to an object plane of the collection optics based on said registered coordinates of said ROI such as to image the ROI (based on the spatial offset, the patient is adjusted by the actuator 104 so that the coordinates of ROI coincide with the predetermined desired location of the imaging plane).

10. Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,662,036 by Cosman.

Regarding claim 9, Cosman discloses a method for imaging a mammal or part thereof using an optical imaging system, the method comprising:

i) placing said animal on a supporting means (as shown in figure 8);  
ii) defining an ROI (figure 8: a target point 44 is an example of an ROI on a patient);  
iii) obtaining a 3 dimensional (3D) contour of said animal comprising at least said ROI (column 15/34-53: a 3D surface of the external anatomy of the patient is obtained, including at the ROI 44);

iv) registering coordinates of said ROI and 3D contour with an optical imaging system having collection optics components (column 15/54-66: the coordinates of the 3D contour around the ROI 44 are registered with the coordinate space of the camera view via the comparator computer 150, figure 8);

v) imaging said ROI of the mammal placed on said supporting means using said optical imaging system wherein said coordinates of said 3D contour are used in said generation of the image of said ROI (column 16/4-11: the output of the comparator 150 is used to move the support of the patient so that the targeted ROI 44 lies within an isocenter 141 of the imaging



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system—that is, the coordinates of the 3D contour are used to register the position of the ROI with the imaging system, and the registration is used to image the ROI of the mammal after moving the support to bring the ROI 44 to the center of the view of the imaging system).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0118280 by Medlar et al. ("Medlar").

Regarding claim 16, Medlar does not expressly disclose the tray (i.e. bed) comprises one or more physiological sensor to monitor desired physiological states in the mammal, however, at the time the invention was made, coupling physiological sensors to a patient's medical bed in order to monitor heartbeat, blood pressure, and the like was exceedingly well known to those skilled in the art and would have been obvious additions to Medlar's patient positioning system.

*Official notice taken.*

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0118280 by Medlar et al. ("Medlar") in view of U.S. Patent 5,894,615 by Alexander.

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Regarding claim 14, Medlar does not expressly disclose that the tray (i.e. the bed) is heated, as claimed. However, at the time the invention was made, providing medical or hospital beds with heating elements for the purposes of patient comfort, controlling body temperature, etc. was well known to those skilled in the art and would have been an obvious addition to Medlar's medical bed in view of Alexander's disclosure (see e.g. Abstract: "particular use in surgical operating rooms for raising and lowering the temperature of the patient").

14. Claim 10 is rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent 6,662,036 by Cosman in view of U.S. Patent 4,896,343 by Saunders.

Regarding claim 10, Cosman discloses said step of obtaining a 3D contour comprises using the "XKnife" planning system, which is commercially available. However, it is unclear whether the XKnife system involves:

i) scanning said ROI with a laser beam directed substantially perpendicularly onto said ROI ; and ii) simultaneously obtaining an image of said beam at said surface of the mammal.

Saunders discloses a system (figure 1) for measuring 3D surface data of a patient in order to control dosage of radiation. In particular, Saunders teaches using laser beams substantially parallel to the surface of an ROI, capturing images of the beams on the surface with a camera, and then employing triangulation principles (figure 2) to obtain measurements of the ROI surface indicative of its 3D contours (figure 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Cosman by Saunders to obtain the 3D contour by scanning the ROI with a laser and obtaining an image of the beam on the surface of the mammal, since Saunders shows that such

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steps are very well-known in the art for deriving 3D surface profiles of patients under examination.

*Allowable Subject Matter*

15. Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims since Medlar does not fairly disclose or suggest the additional limitations of claim 5.

*Related Prior Art*

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,396,940 by Carrott et al.;

U.S. Patent 6,279,579 by Riazat et al.;

U.S. Patent 5,531,520 by Grimson et al.; and

U.S. Patent 5,823,192 by Kalend et al.


*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor,

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Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000. Any inquiry of a general nature or relating to the status of this application or proceeding can also be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.

  
Colin M. LaRose  
Group Art Unit 2624  
28 March 2007